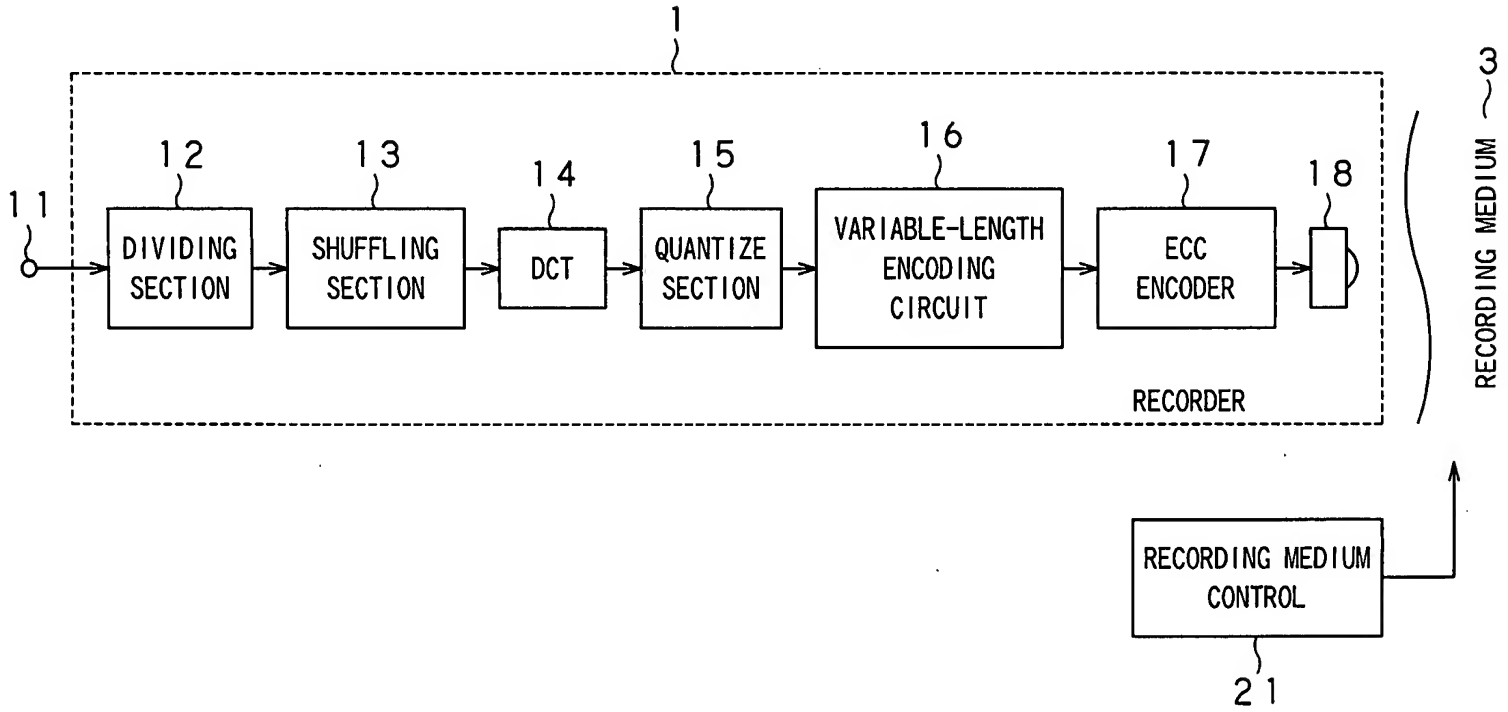
1
11
12
DIVIDING SECTION
13
SHUFFLING SECTION
14
DCT
15
QUANTIZE SECTION
16
VARIABLE-LENGTH ENCODING CIRCUIT
17
ECC ENCODER
18
RECORDER
3
RECORDING MEDIUM
RECORDING MEDIUM CONTROL
21

FIG. 1

422 (YPbPr)	FIRST DIGITAL IMAGE SIGNALS	SECOND DIGITAL IMAGE SIGNALS
	422 (60P)	422 (30P)
1920*1080	TWO DECODERS (900Mbps)	ONE DECODER (450Mbps)
1280*720	NOT COMPATIBLE	ONE DECODER (450Mbps)

FIG.2A

	RECORDING 422(60P) TAPE	1/2-SPEED REPRODUCTION 422(30P) WITHOUT INTERPOLATION
1920*1080	TWO DECODERS (900Mbps)	ONE DECODER (450Mbps)

FIG.2B

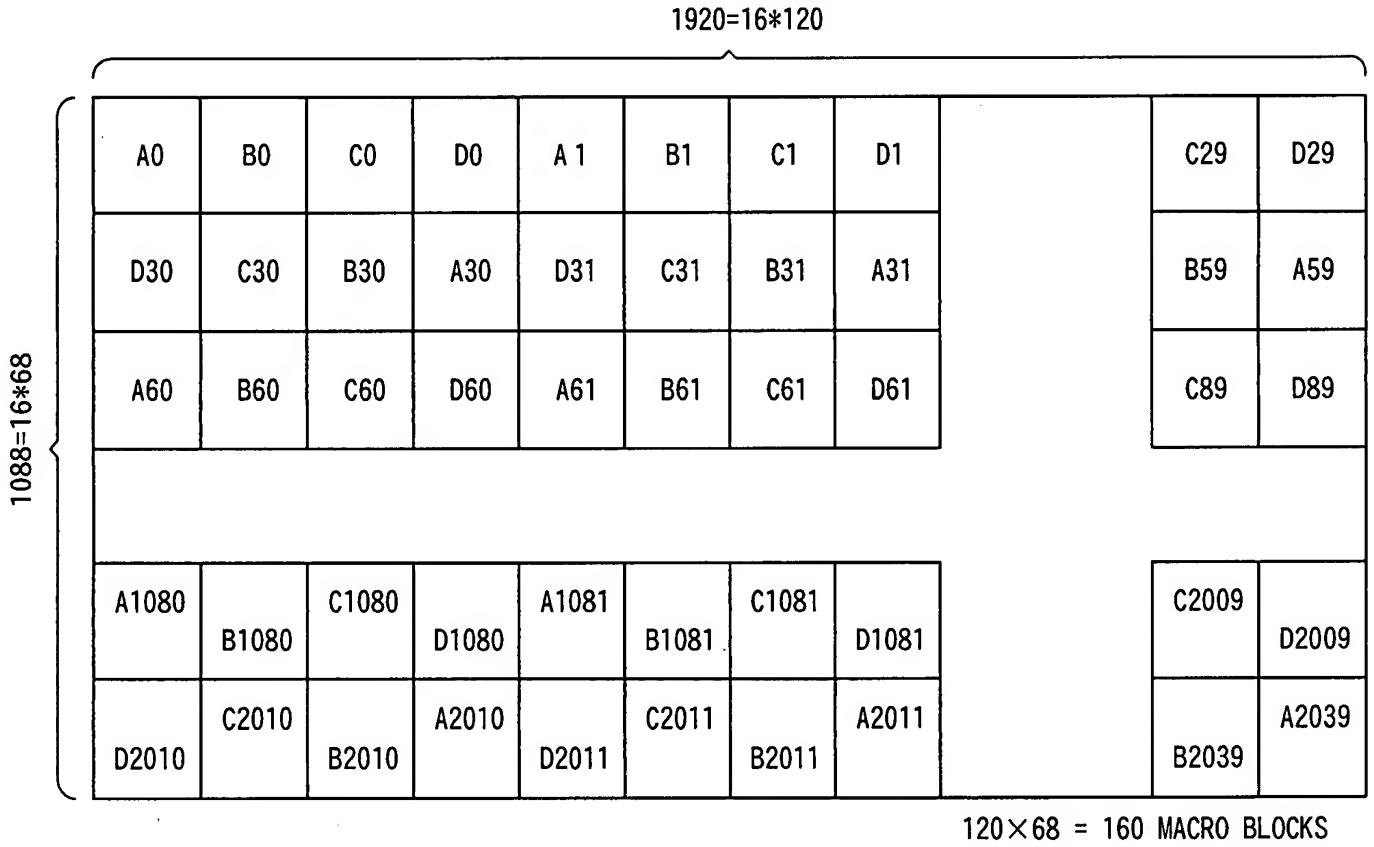
1920=16*120
1088=16*68
A0
B0
C0
D0
A 1
B1
C1
D1
C29
D29
D30
C30
B30
A30
D31
C31
B31
A31
B59
A59
A60
B60
C60
D60
A61
B61
C61
D61
C89
D89
A1080
B1080
C1080
D1080
A1081
B1081
C1081
D1081
C2009
D2009
D2010
C2010
B2010
A2010
D2011
C2011
B2011
A2011
B2039
A2039
120×68 = 160 MACRO BLOCKS

FIG.3

SECOND DIGITAL IMAGE SIGNALS 422 (30P)

	SHUFFLING GROUPS A AND B		SHUFFLING GROUPS C AND D
MBU		MBU	
0	A0, A10, A20, A30, ···A2030	20	C0, C10, C20, C30, ···C2030
1	B0, B10, B20, B30, ···B2030	21	D0, D10, D20, D30, ···D2030
2	A1, A11, A21, A31, ···A2031	22	C1, C11, C21, C31, ···C2031
3	B1, B11, B21, B31, ···B2031	23	D1, D11, D21, D31, ···D2031
4	A2, A12, A22, A32, ···A2032	24	C2, C12, C22, C32, ···C2032
5	B2, B12, B22, B32, ···B2032	25	D2, D12, D22, D32, ···D2032
6	A3, A13, A23, A33, ···A2033	26	C3, C13, C23, C33, ···C2033
7	B3, B13, B23, B33, ···B2033	27	D3, D13, D23, D33, ···D2033
8	A4, A14, A24, A34, ···A2034	28	C4, C14, C24, C34, ···C2034
9	B4, B14, B24, B34, ···B2034	29	D4, D14, D24, D34, ···D2034
10	A5, A15, A25, A35, ···A2035	30	C5, C15, C25, C35, ···C2035
11	B5, B15, B25, B35, ···B2035	31	D5, D15, D25, D35, ···D2035
12	A6, A16, A26, A36, ···A2036	32	C6, C16, C26, C36, ···C2036
13	B6, B16, B26, B36, ···B2036	33	D6, D16, D26, D36, ···D2036
14	A7, A17, A27, A37, ···A2037	34	C7, C17, C27, C37, ···C2037
15	B7, B17, B27, B37, ···B2037	35	D7, D17, D27, D37, ···D2037
16	A8, A18, A28, A38, ···A2038	36	C8, C18, C28, C38, ···C2038
17	B8, B18, B28, B38, ···B2038	37	D8, D18, D28, D38, ···D2038
18	A9, A19, A29, A39, ···A2039	38	C9, C19, C29, C39, ···C2039
19	B9, B19, B29, B39, ···B2039	39	D9, D19, D29, D39, ···D2039

FIG.4

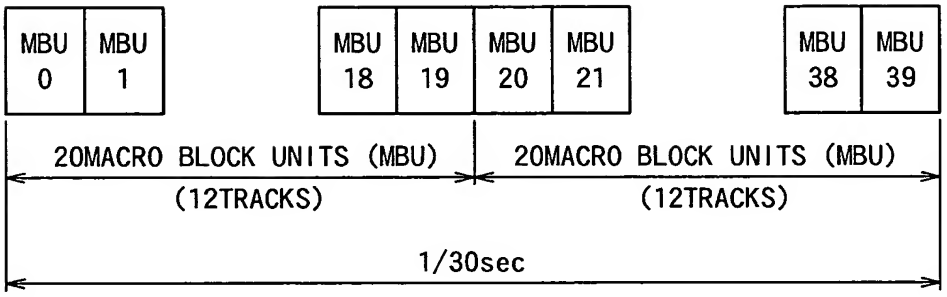
MBU 0
MBU 1
MBU 18
MBU 19
MBU 20
MBU 21
MBU 38
MBU 39
20MACRO BLOCK UNITS (MBU)
(12TRACKS)
20MACRO BLOCK UNITS (MBU)
(12TRACKS)
1/30sec

FIG.5

MACRO BLOCKS TO BE RECORDED IN TWELVE BLOCKS IN THE FIRST HALF

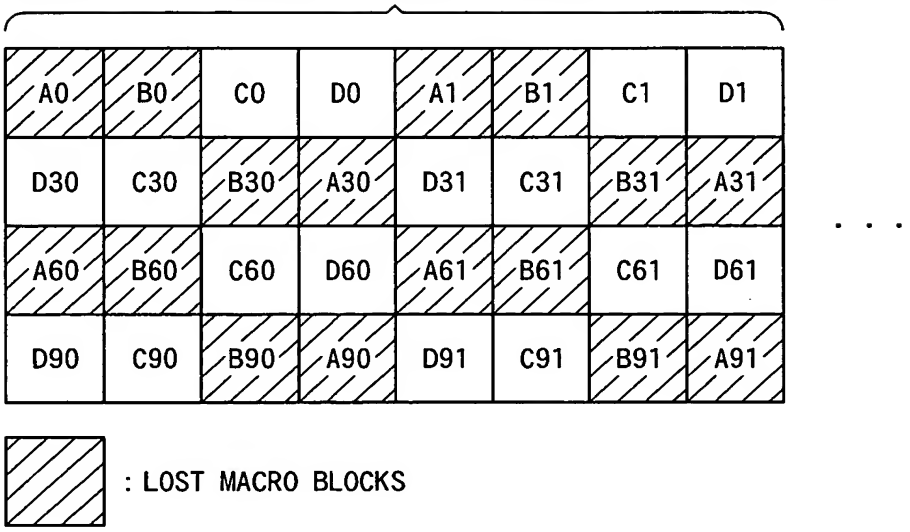

FIG.6A

MACRO BLOCKS TO BE RECORDED IN TWELVE BLOCKS IN THE LAST HALF

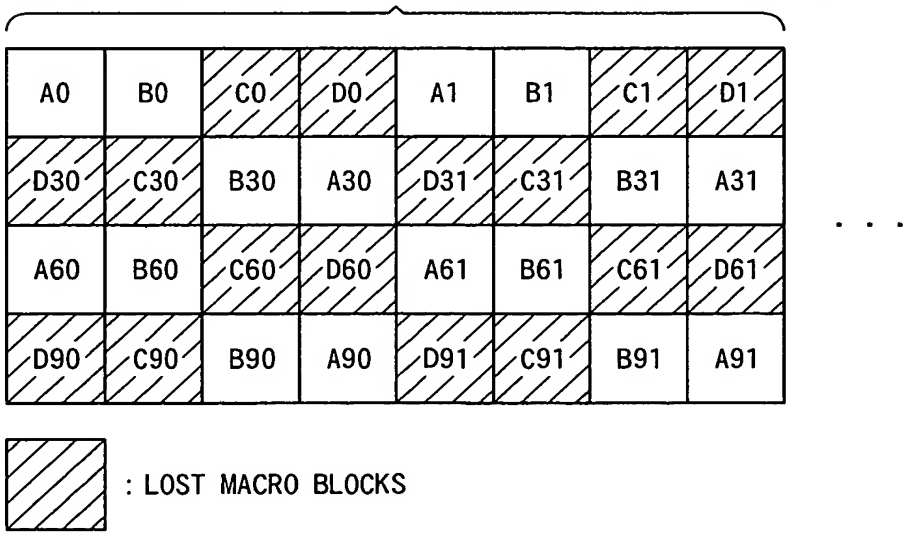

FIG.6B

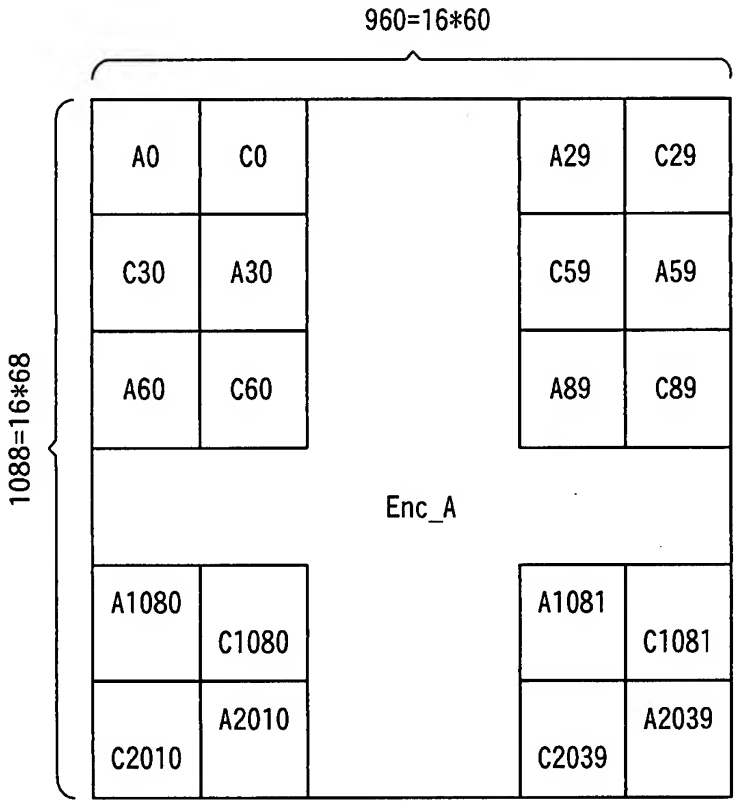
960=16*60
1088=16*68
A0
C0
A29
C29
C30
A30
C59
A59
A60
C60
A89
C89
Enc_A
A1080
C1080
A1081
C1081
C2010
A2010
C2039
A2039

FIG.7A

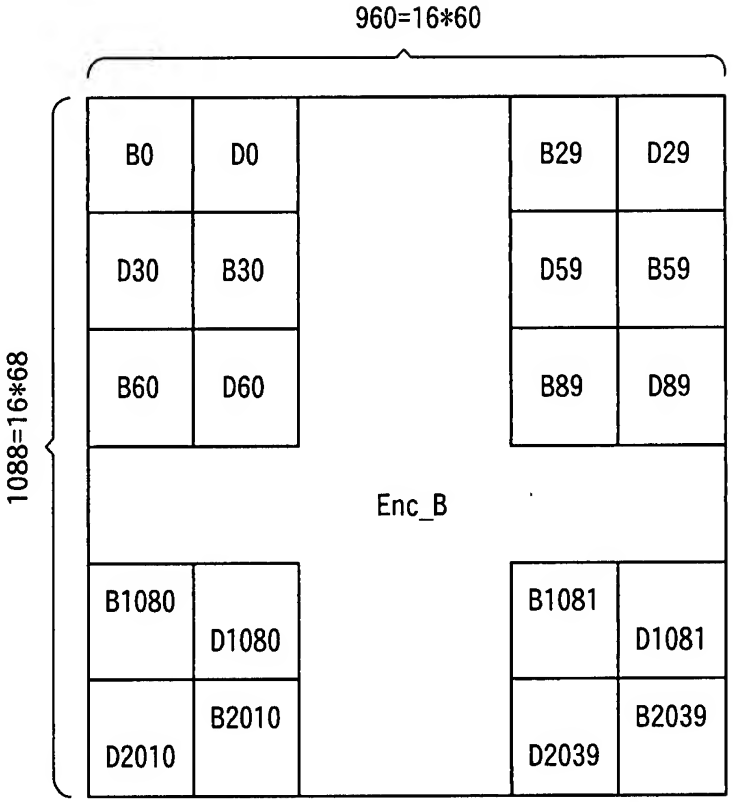
960=16*60
1088=16*68
B0
D0
B29
D29
D30
B30
D59
B59
B60
D60
B89
D89
Enc_B
B1080
D1080
B1081
D1081
D2010
B2010
D2039
B2039

FIG.7B

FIRST DIGITAL IMAGE SIGNALS 422 (60P)

Enc_A	SHUFFLING GROUPS A AND C	Enc_B	SHUFFLING GROUPS B AND D
MBU		MBU	
0	A0, A10, A20, A30, ···A2030	1	B0, B10, B20, B30, ···B2030
2	A1, A11, A21, A31, ···A2031	3	B1, B11, B21, B31, ···B2031
4	A2, A12, A22, A32, ···A2032	5	B2, B12, B22, B32, ···B2032
6	A3, A13, A23, A33, ···A2033	7	B3, B13, B23, B33, ···B2033
8	A4, A14, A24, A34, ···A2034	9	B4, B14, B24, B34, ···B2034
10	A5, A15, A25, A35, ···A2035	11	B5, B15, B25, B35, ···B2035
12	A6, A16, A26, A36, ···A2036	13	B6, B16, B26, B36, ···B2036
14	A7, A17, A27, A37, ···A2037	15	B7, B17, B27, B37, ···B2037
16	A8, A18, A28, A38, ···A2038	17	B8, B18, B28, B38, ···B2038
18	A9, A19, A29, A39, ···A2039	19	B9, B19, B29, B39, ···B2039
20	C0, C10, C20, C30, ···C2030	21	D0, D10, D20, D30, ···D2030
22	C1, C11, C21, C31, ···C2031	23	D1, D11, D21, D31, ···D2031
24	C2, C12, C22, C32, ···C2032	25	D2, D12, D22, D32, ···D2032
26	C3, C13, C23, C33, ···C2033	27	D3, D13, D23, D33, ···D2033
28	C4, C14, C24, C34, ···C2034	29	D4, D14, D24, D34, ···D2034
30	C5, C15, C25, C35, ···C2035	31	D5, D15, D25, D35, ···D2035
32	C6, C16, C26, C36, ···C2036	33	D6, D16, D26, D36, ···D2036
34	C7, C17, C27, C37, ···C2037	35	D7, D17, D27, D37, ···D2037
36	C8, C18, C28, C38, ···C2038	37	D8, D18, D28, D38, ···D2038
38	C9, C19, C29, C39, ···C2039	39	D9, D19, D29, D39, ···D2039

FIG.8

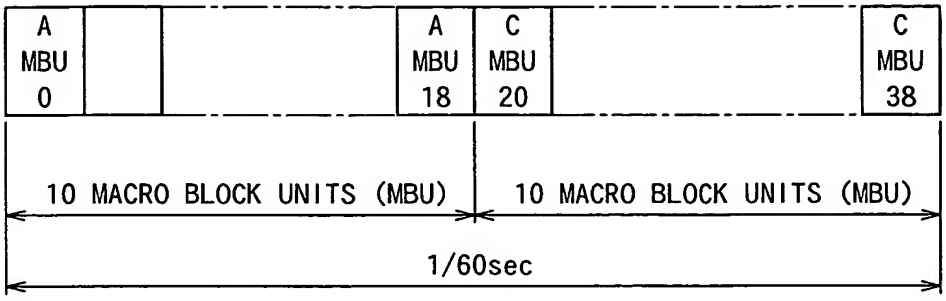

FIG.9A

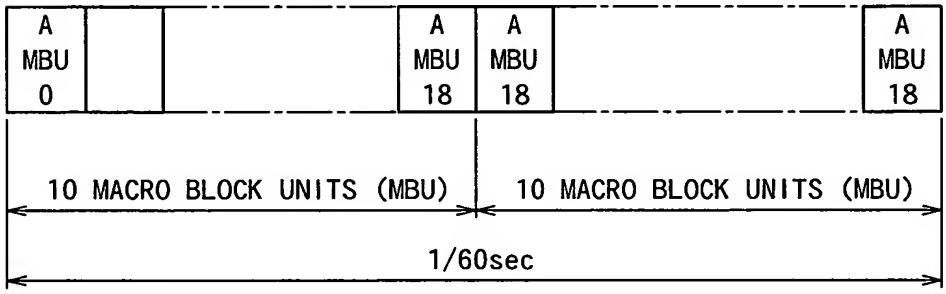

FIG.9B

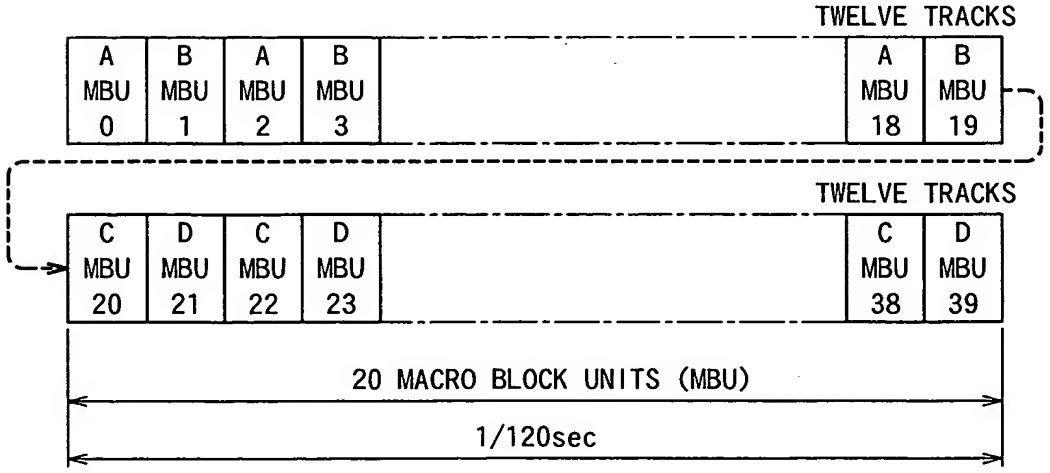

FIG.10

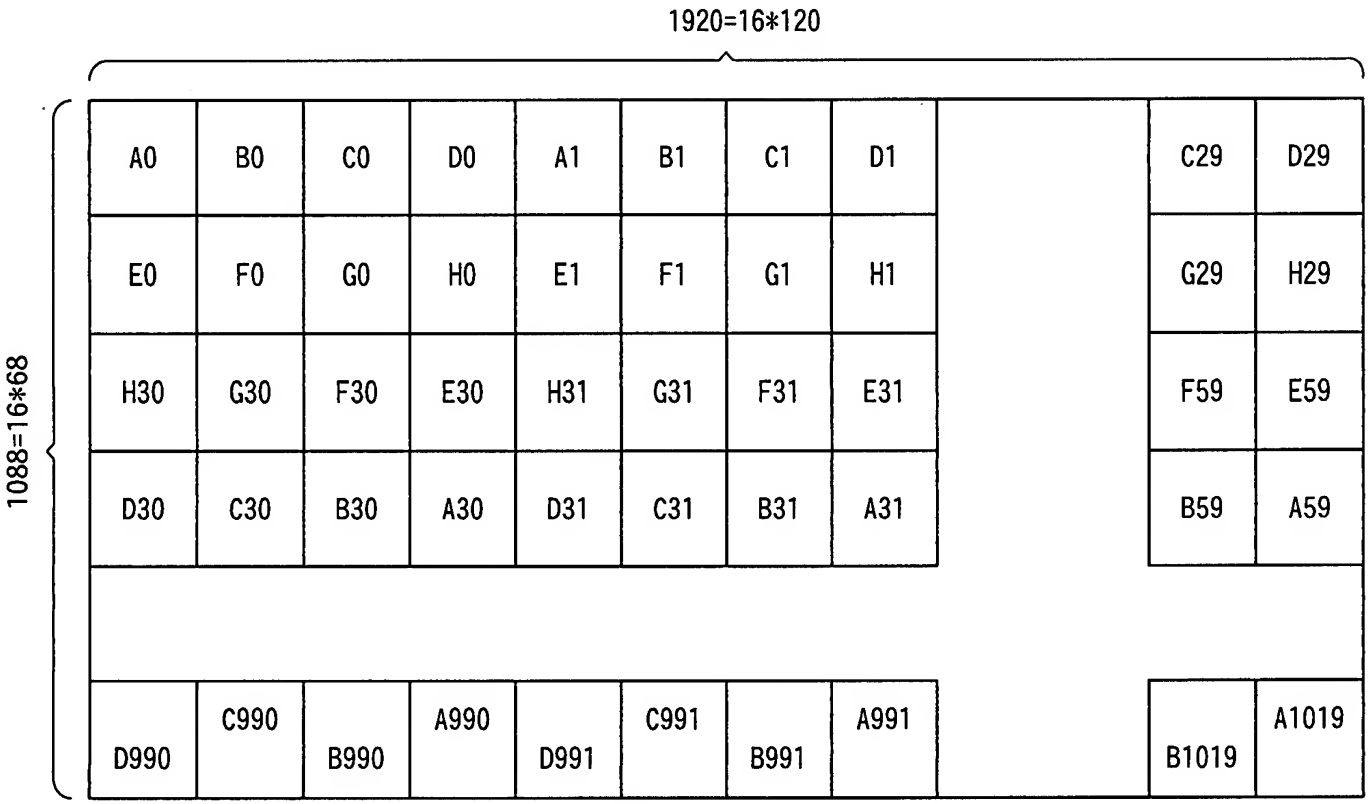
1920=16*120
1088=16*68
A0
B0
C0
D0
A1
B1
C1
D1
C29
D29
E0
F0
G0
H0
E1
F1
G1
H1
G29
H29
H30
G30
F30
E30
H31
G31
F31
E31
F59
E59
D30
C30
B30
A30
D31
C31
B31
A31
B59
A59
D990
C990
B990
A990
D991
C991
B991
A991
B1019
A1019

FIG.11

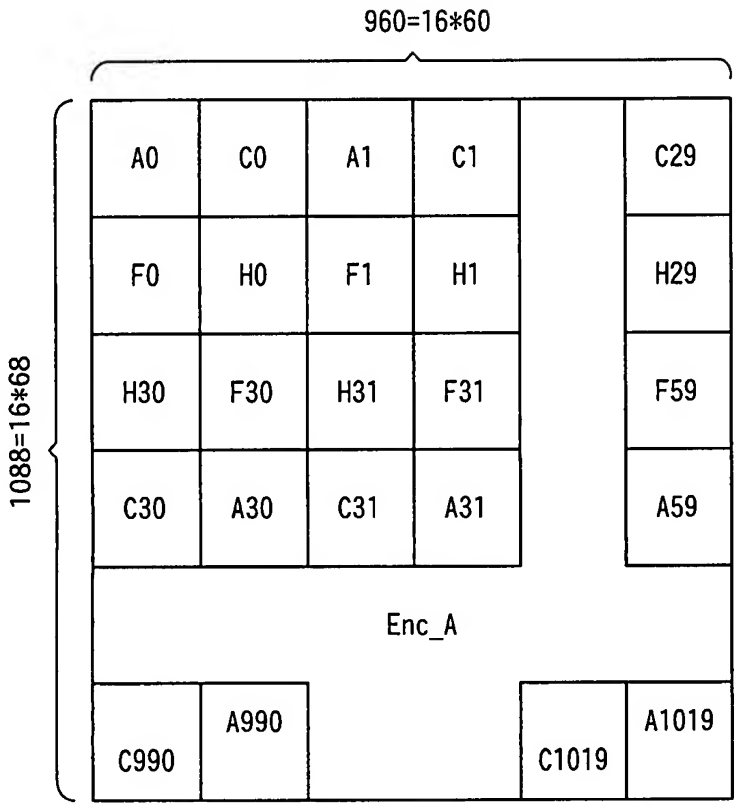

FIG.12A

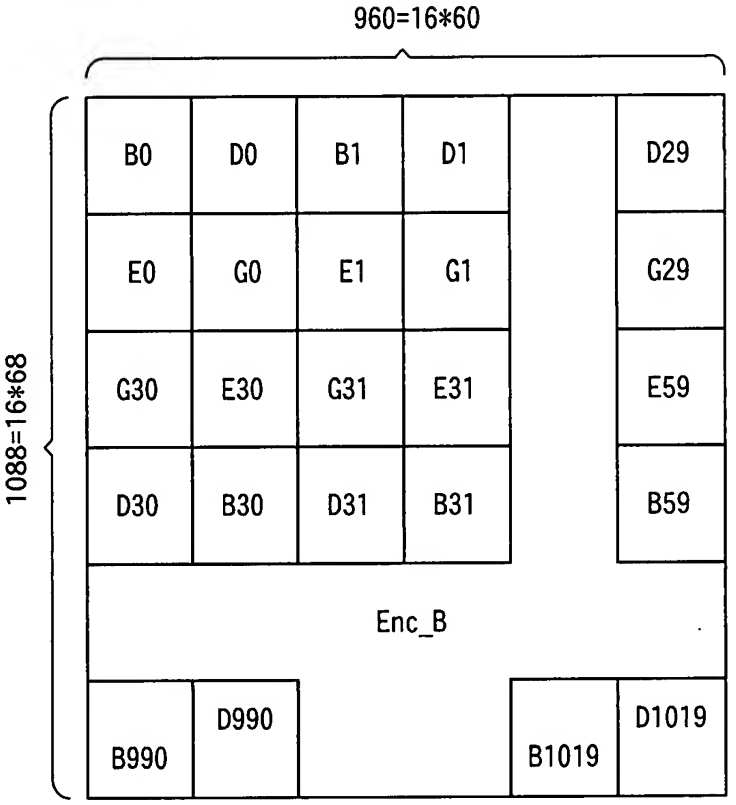

FIG.12B

SECOND DIGITAL IMAGE SIGNALS 444 (30P)

Enc_A	SHUFFLING GROUPS A, C, F AND H	Enc_B	SHUFFLING GROUPS B, D, E AND G
MBU		MBU	
0	A0, A5, A10, A15, ···A1015	1	B0, B5, B10, B15, ···B1015
2	H0, H5, H10, H15, ···H1015	3	G0, G5, G10, G15, ···G1015
4	A1, A6, A11, A16, ···A1016	5	B1, B6, B11, B16, ···B1016
6	H1, H6, H11, H16, ···H1016	7	G1, G6, G11, G16, ···G1016
8	A2, A7, A12, A17, ···A1017	9	B2, B7, B12, B17, ···B1017
10	H2, H7, H12, H17, ···H1017	11	G2, G7, G12, G17, ···G1017
12	A3, A8, A13, A18, ···A1018	13	B3, B8, B13, B18, ···B1018
14	H3, H8, H13, H18, ···H1018	15	G3, G8, G13, G18, ···G1018
16	A4, A9, A14, A19, ···A1019	17	B4, B9, B14, B19, ···B1019
18	H4, H9, H14, H19, ···H1019	19	G4, G9, G14, G19, ···G1019
20	F0, F5, F10, F15, ···F1015	21	E0, E5, E10, E15, ···E1015
22	C0, C5, C10, C15, ···C1015	23	D0, D5, D10, D15, ···D1015
24	F1, F6, F11, F16, ···F1016	25	E1, E6, E11, E16, ···E1016
26	C1, C6, C11, C16, ···C1016	27	D1, D6, D11, D16, ···D1016
28	F2, F7, F12, F17, ···F1017	29	E2, E7, E12, E17, ···E1017
30	C2, C7, C12, C17, ···C1017	31	D2, D7, D12, D17, ···D1017
32	F3, F8, F13, F18, ···F1018	33	E3, E8, E13, E18, ···E1018
34	C3, C8, C13, C18, ···C1018	35	D3, D8, D13, D18, ···D1018
36	F4, F9, F14, F19, ···F1019	37	E4, E9, E14, E19, ···E1019
38	C4, C9, C14, C19, ···C1019	39	D4, D9, D14, D19, ···D1019

FIG.13

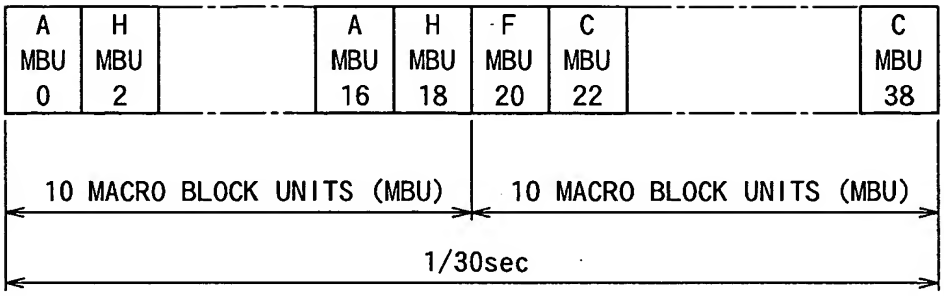

FIG.14A

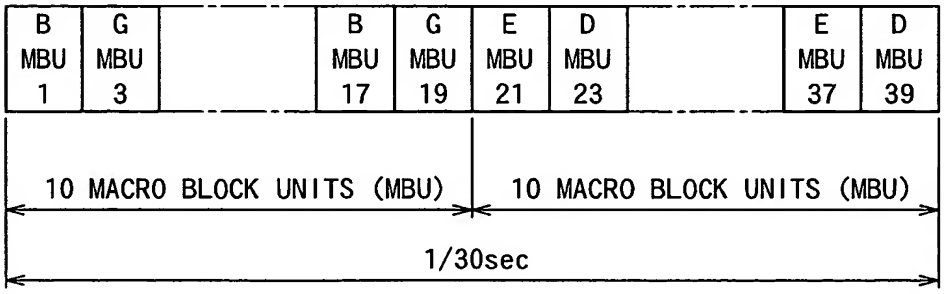

FIG.14B

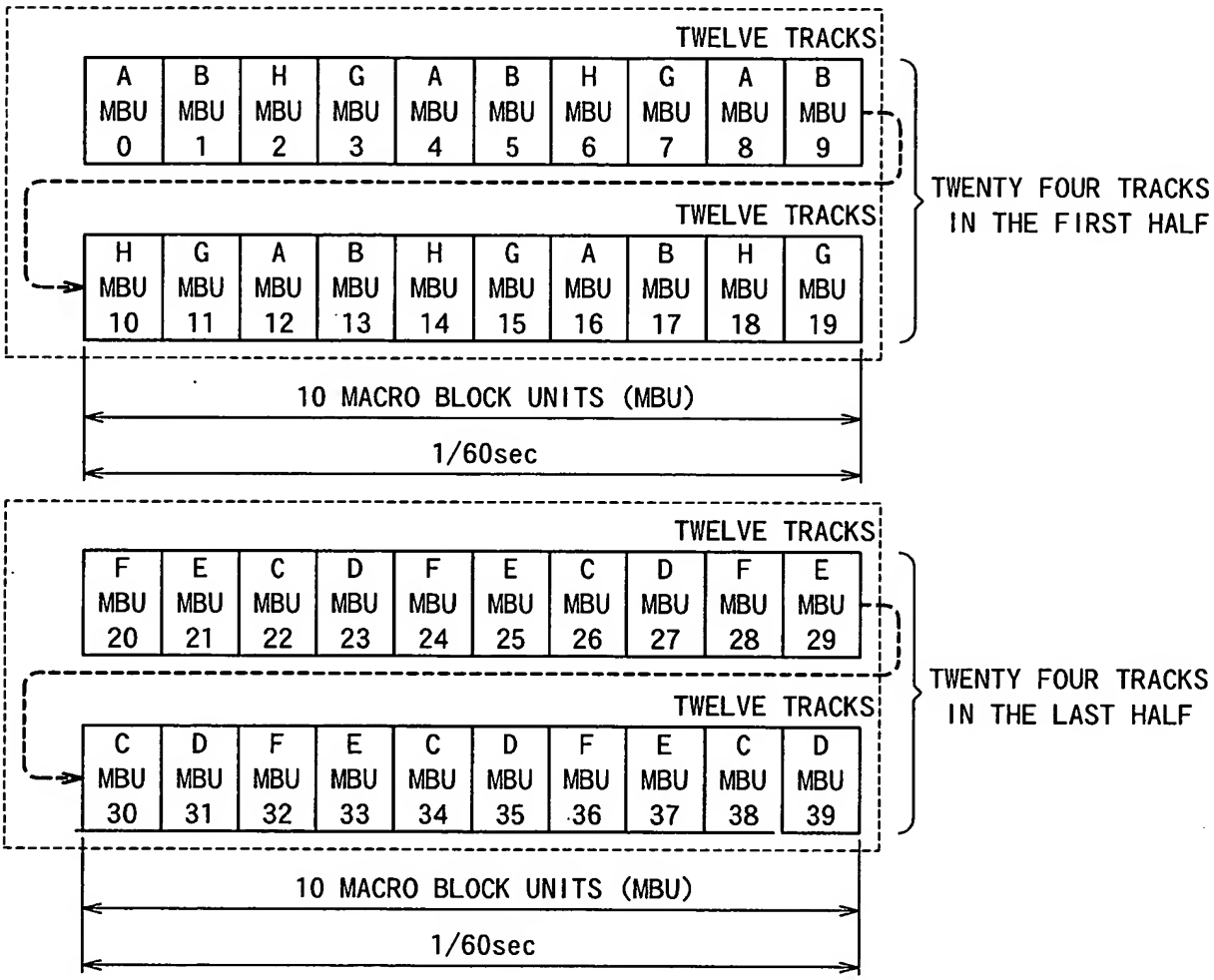
TWELVE TRACKS
A MBU 0
B MBU 1
H MBU 2
G MBU 3
A MBU 4
B MBU 5
H MBU 6
G MBU 7
A MBU 8
B MBU 9
TWELVE TRACKS
H MBU 10
G MBU 11
A MBU 12
B MBU 13
H MBU 14
G MBU 15
A MBU 16
B MBU 17
H MBU 18
G MBU 19
TWENTY FOUR TRACKS IN THE FIRST HALF
10 MACRO BLOCK UNITS (MBU)
1/60sec
TWELVE TRACKS
F MBU 20
E MBU 21
C MBU 22
D MBU 23
F MBU 24
E MBU 25
C MBU 26
D MBU 27
F MBU 28
E MBU 29
TWELVE TRACKS
C MBU 30
D MBU 31
F MBU 32
E MBU 33
C MBU 34
D MBU 35
F MBU 36
E MBU 37
C MBU 38
D MBU 39
TWENTY FOUR TRACKS IN THE LAST HALF
10 MACRO BLOCK UNITS (MBU)
1/60sec

FIG.15

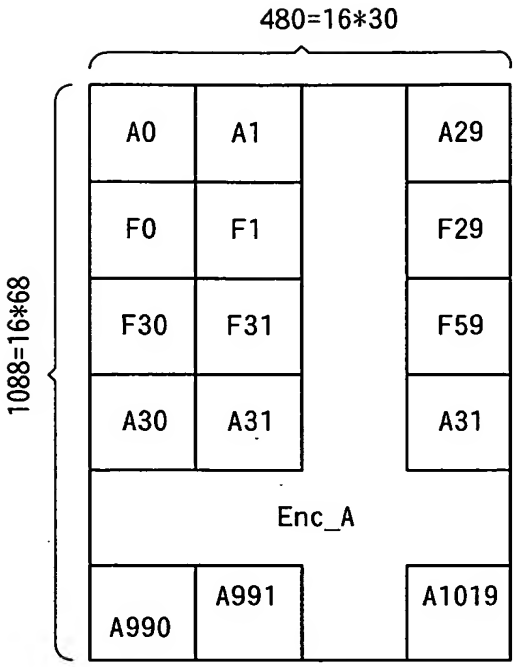

FIG.16A

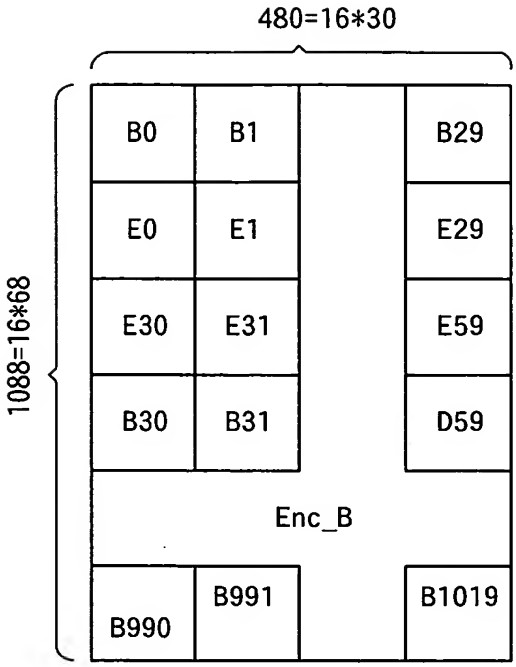

FIG.16B

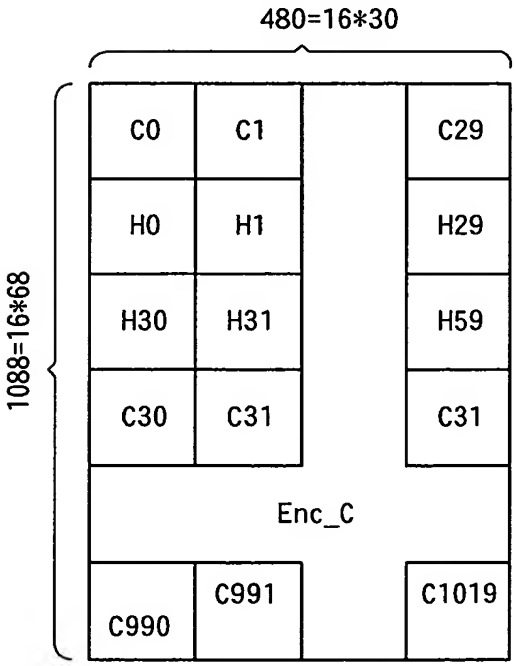

FIG.16C

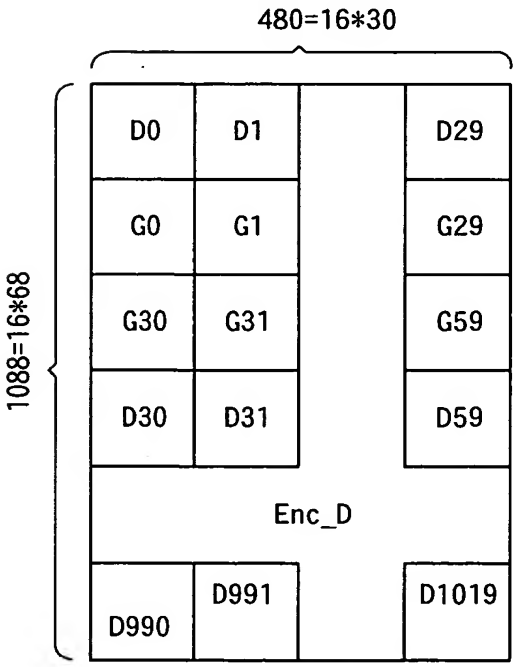

FIG.16D

FIRST DIGITAL IMAGE SIGNALS 444 (60P)

Enc_A	SHUFFLING GROUPS A AND F	Enc_B	SHUFFLING GROUPS B AND E
MBU		MBU	
0	A0, A5, A10, A15, ···A1015	1	B0, B5, B10, B15, ···B1015
4	A1, A6, A11, A16, ···A1016	5	B1, B6, B11, B16, ···B1016
8	A2, A7, A12, A17, ···A1017	9	B2, B7, B12, B17, ···B1017
12	A3, A8, A13, A18, ···A1018	13	B3, B8, B13, B18, ···B1018
16	A4, A9, A14, A19, ···A1019	17	B4, B9, B14, B19, ···B1019
20	F0, F5, F10, F15, ···F1015	21	E0, e5, e10, e15, ···e1015
24	F1, F6, F11, F16, ···F1016	25	E1, e6, e11, e16, ···e1016
28	F2, F7, F12, F17, ···F1017	29	E2, e7, e12, e17, ···e1017
32	F3, F8, F13, F18, ···F1018	33	E3, E8, E13, E18, ···E1018
36	F4, F9, F14, F19, ···F1019	37	E4, E9, E14, E19, ···E1019

Enc_C	SHUFFLING GROUPS C AND H	Enc_D	SHUFFLING GROUPS D AND G
MBU		MBU	
2	H0, h5, h10, h15, ···h1015	3	G0, G5, G10, G15, ···G1015
6	H1, h6, h11, h16, ···h1016	7	G1, G6, G11, G16, ···G1016
10	H2, h7, h12, h17, ···h1017	11	G2, G7, G12, G17, ···G1017
14	H3, H8, H13, H18, ···H1018	15	G3, G8, G13, G18, ···G1018
18	H4, h9, h14, h19, ···h1019	19	G4, G9, G14, G19, ···G1019
22	C0, C5, C10, C15, ···C1015	23	D0, D5, D10, D15, ···D1015
26	C1, C6, C11, C16, ···C1016	27	D1, D6, D11, D16, ···D1016
30	C2, C7, C12, C17, ···C1017	31	D2, D7, D12, D17, ···D1017
34	C3, C8, C13, C18, ···C1018	35	D3, D8, D13, D18, ···D1018
38	C4, C9, C14, C19, ···C1019	39	D4, D9, D14, D19, ···D1019

FIG.17

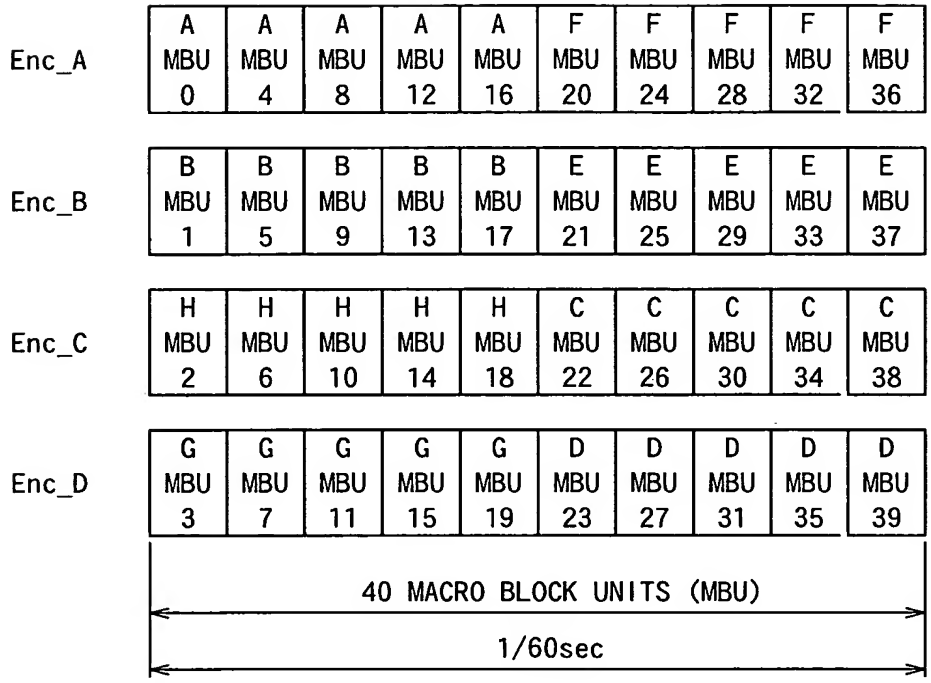
Enc_A
A MBU 0
A MBU 4
A MBU 8
A MBU 12
A MBU 16
F MBU 20
F MBU 24
F MBU 28
F MBU 32
F MBU 36
Enc_B
B MBU 1
B MBU 5
B MBU 9
B MBU 13
B MBU 17
E MBU 21
E MBU 25
E MBU 29
E MBU 33
E MBU 37
Enc_C
H MBU 2
H MBU 6
H MBU 10
H MBU 14
H MBU 18
C MBU 22
C MBU 26
C MBU 30
C MBU 34
C MBU 38
Enc_D
G MBU 3
G MBU 7
G MBU 11
G MBU 15
G MBU 19
D MBU 23
D MBU 27
D MBU 31
D MBU 35
D MBU 39
40 MACRO BLOCK UNITS (MBU)
1/60sec

FIG.18

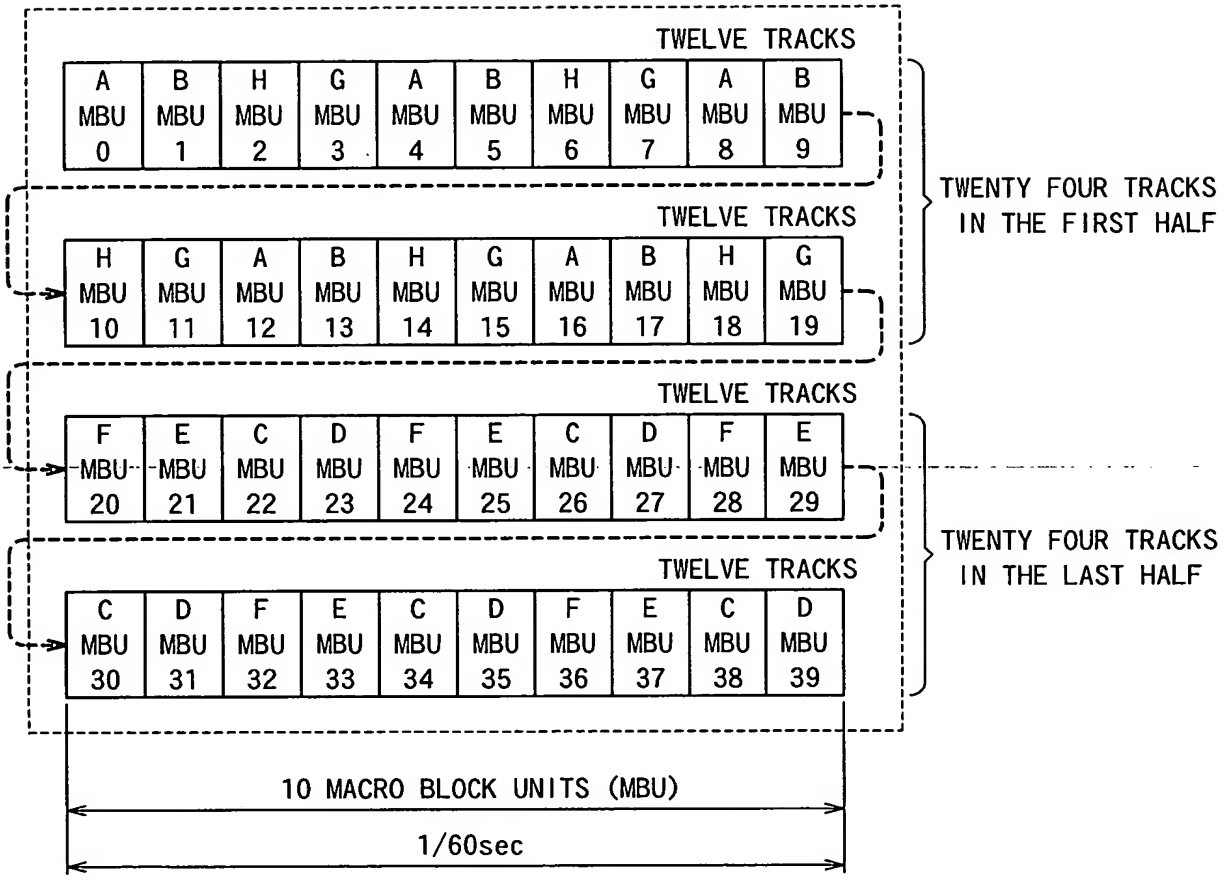
TWELVE TRACKS
A MBU 0
B MBU 1
H MBU 2
G MBU 3
A MBU 4
B MBU 5
H MBU 6
G MBU 7
A MBU 8
B MBU 9
TWELVE TRACKS
H MBU 10
G MBU 11
A MBU 12
B MBU 13
H MBU 14
G MBU 15
A MBU 16
B MBU 17
H MBU 18
G MBU 19
TWENTY FOUR TRACKS IN THE FIRST HALF
TWELVE TRACKS
F MBU 20
E MBU 21
C MBU 22
D MBU 23
F MBU 24
E MBU 25
C MBU 26
D MBU 27
F MBU 28
E MBU 29
TWELVE TRACKS
C MBU 30
D MBU 31
F MBU 32
E MBU 33
C MBU 34
D MBU 35
F MBU 36
E MBU 37
C MBU 38
D MBU 39
TWENTY FOUR TRACKS IN THE LAST HALF
10 MACRO BLOCK UNITS (MBU)
1/60sec

FIG.19

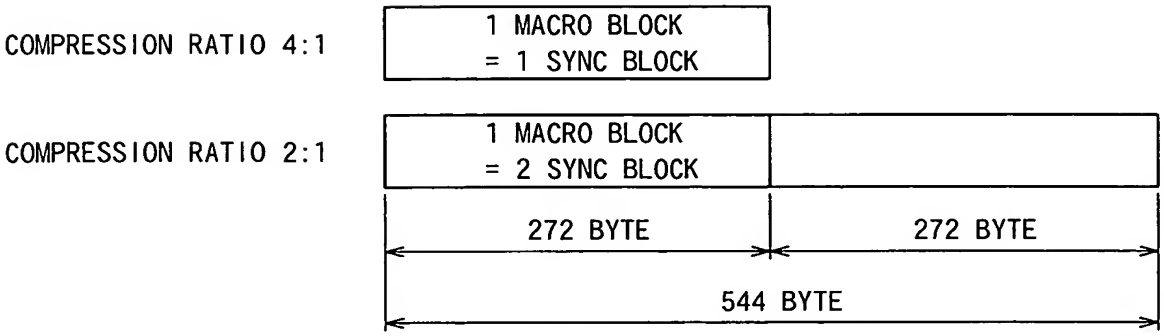

FIG.20

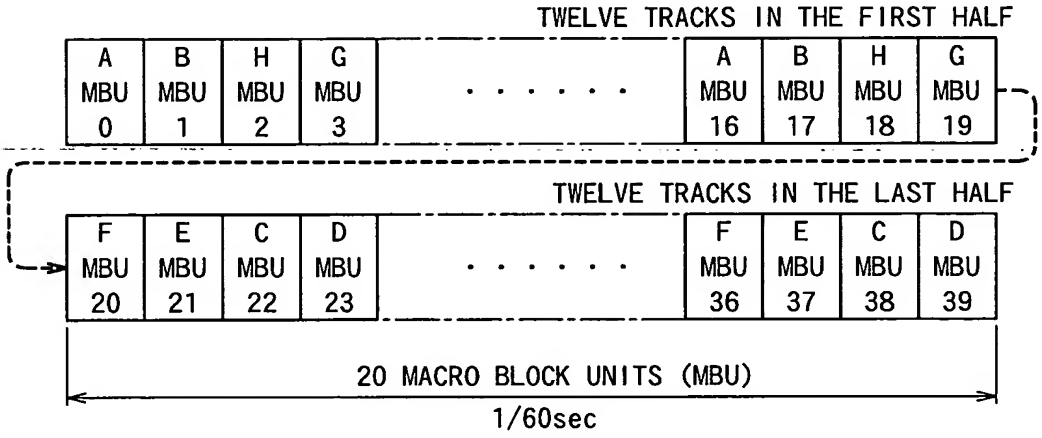

FIG.21

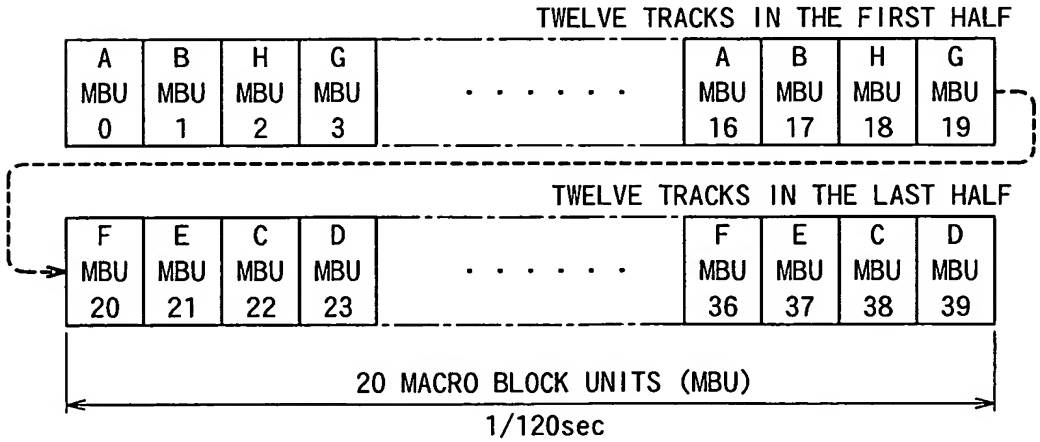

FIG.22